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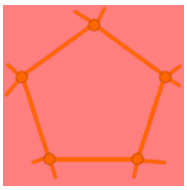
Animation Modeling Topology

There are many ways to do animation, but usually the pipeline includes animating and test-rendering a low-resolution or simplified scene, then, when all is right, subdividing applicable geometry and boosting the lighting and indirect illumination settings to the limit based on planned rendering time.

Sometimes, no additional subdivision is necessary, especially in cases when there is enough geometry with small-enough detail, or detail refined using segmenting or other modeling techniques. Animation that includes a primarily mechanical-style geometry doesn't usually require much subdivision. However, organic characters usually tend to look better with subdivision, especially in close-up shots. Also, stylistic cartoon-style 3D animation renderings, whether or not cell-shaded, usually requires subdivision, sometimes to more than one or two levels.

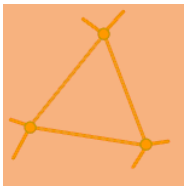
The restrictions for animation topology usually aren't as inclusive as modern 3D-game engine topology. There are several reasons for this:

- 1. The animator has control over what angles will the model be viewed from, thus the model, in a lot of times, need not be fine-tuned for every possible viewing angle as an in-game model usually is.
- 2. The animator does not have to worry about 3D-engine-specific requirements. He can, for instance, choose to conceal a hole with other geometry instead of having to worry about capping it.
- 3. The animator is not limited to real-time 3D processing speeds. He can extend the processing (rendering) time drammatically, though drastically improving the resulting animation.



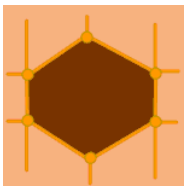
N-gons

N-gons generally tend to skrew up your animations and character posing, no matter how far away they are located from the joints. They tend to look funky even with subdivision algorythms that do "understand" how to process them. In any pipeline, N-gons are a **definite no** for any final render of any model. Keep in mind, your high-resolution models are **not for final renders** and, of course, cannot be used in game engines either.



Triangles

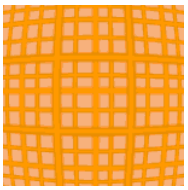
Sometimes, in animation, triangles are admissable. They sometimes fit the targeted geometry better. A good and rather obvious example when you are even better off using triangles is when you need to make a sharp-pointed spike, conical or of any other crossection, and with no subdivision, offcourse. The place where those shouldn't be used is on the, so-called, "grace-lines", or joints and frequent-motion areas on the model are. Those include but are not limited to: all finger, wrist, arm, shoulder, toe, knee, hip, joints, sometimes the neck-to-head, neck-to-body, and stomack-to-pelvis borders, as well as browlines, cheeck-to-jaw lines, the nose-ridge between the eyes, nostdrill-to-midnose lines, eyelids, lips, etc. - in general, all the parts that re-orient against one-another.



Holes

You may use holes in animaiton models. Advanced / indirect lighting in animation is often better processed when the completely useless

surfaces are completely eliminated, to better optimize the scene. Keep in mind, though, that no one watching the animation wants to see a random hole in a model - this will make the animation seem very unprofessional and second-grade.

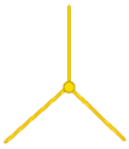


Dense / High Polycount Areas

Medium polycount is usually optimal for animation, though some places can gain a more smooth feel to them with more subdivisions. Nonetheless, only a big company with a large-scale production can afford a network render with more than 16-24 mental ray render nodes (2-3 seats) that can handle real high-res geometry with good lighting at decent-enough rendering times.

5-or-more-edged Vertexes

Vertexes that are surrounded by (define one end of) five edges are acceptable, as long as they don't mess up your grace-lines, which are described above in the **Triangles** section. Try to limit these.



3-Edged Vertexes

These are also ok. Also watch the grace-lines. These are usually even less trouble than the 5-edged vertexes.

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